1.   (Currently Amended and Previously Presented and Twice Amended)
A method for communicating a data stream, the method comprising the
steps of,

generating a sequence of data symbols from the data stream,

precoding the sequence of data symbols into a sequence of
precoded data symbols,

modulating the sequence of precoded data symbols into a
continuous phase modulated signal,

transmitting the continuous phase modulated signal,

receiving the continuous phase modulated signal, and

filtering the continuous phase modulated signal into a
sequence of filtered signals having absolute phase for indicating
the sequence of data symbols, wherein,

the generating step comprises the steps of receiving the data
stream of data bits, formatting the data stream into the sequence
of formatted data pulses as a sequence of data symbols within an M-
ary symbol set,

the modulating step comprises the steps of Gaussian filtering
and frequency modulating for generating the continuous phase
modulated signal, the Gaussian filter step filters the precoded
sequence of data symbols into pulse responses continuously
accumulated over a finite memory time as a filter response, the
Gaussian filtering step is defined by a bandwidth time product
inversely defining the finite memory time, the frequency modulating
step frequency modulates a carrier reference by the filter response
by a modulation index for converting the filter response into the
continuous phase modulated signal,

1   the continuous phase modulated signal is up converted from

2   baseband during the transmitting step and is down converted to

3   baseband during the receiving step using a local carrier, and

4   the filtering step is a matched filtering step for matched

5   filtering of the received continuous phase modulated signal into

6   the filtered signal, the matched filtering is matched by pulse

7   amplitude modulation representation to the Gaussian filtering step,

8   the filtered signal has an absolute phase at a periodic sampling

9   time for indicating the sequence of data symbols.

10

11   2.   (Previously Presented and Once Amended) The method of claim 1

12   further comprising the steps of,

13   sampling the sequence of filtered signals into a sequence of

14   sampled symbols, and

15   demodulating the sequence of sampled symbols into an estimated

16   data stream.

17

18

19   3. (Currently Canceled)

20

21   3

22   4.(Currently Amended, Previously Presented and Thrice Amended) The

23   method of claim 3 1 wherein,

24   the modulation index is equal to a fraction selected from a

25   group consisting of 1/M and (1-1/M) fractions for the M-ary symbol

26   set where $M=2^k$ and k is an integer.

27

28   ///

1   5. (Previously Presented and Twice Amended)   A method for

2 communicating a data stream, the method comprising the steps of,

3   generating a sequence of data symbols from the data stream by

4 formatting the data stream into the sequence of formatted data

5 pulses as a sequence of data symbols within a 2-ary symbol set,

6   precoding the sequence of data symbols into a sequence of

7 precoded data symbols,

8   Gaussian filtering the precoded sequence of data symbols into

9 pulse responses continuously accumulated over a finite memory time

10 as a filter response, the Gaussian filtering is defined by a

11 bandwidth time product inversely defining the finite memory time,

12   frequency modulating a carrier reference by the filter

13 response by a modulation index for converting the filter response

14 into a continuous phase modulated signal, and

15   matched filtering the received continuos phase modulation

16 signal into a filtered signal, the matched filtering is matched by

17 pulse amplitude modulation representation to the Gaussian

18 filtering, the filtered signal has an absolute phase at a periodic

19 sampling time for indicating the sequence of data symbols.

20

21   6. (Previously Presented and Amended)   The method of claim 5,

22 wherein,

23   the sequence of data symbols has a data symbol d_n at a current

24 symbol time n where n is an integer and has a data symbol d_{n-1} at an

25 immediate previous symbol time n-1 for precoding the data sequence

26 into the sequence precoded data symbols having a precoded data

27 symbol α_n at the current symbol time, the precoding step is defined

28 by $\alpha_n = [\ d_n - d_{n-1} + 1\ ]_{mod4}$.

6. (Previously Presented and Once Amended)   The method of claim 4,
wherein,

   the sequence of data symbols has a data symbol d_n at a current
symbol time n where n is an integer and has a data symbol d_{n-1} at an
immediate previous symbol time n-1 for precoding the data sequence
into the sequence of precoded data symbols having a precoded data
symbol α_n at the current symbol time for even symbol times and for
odd symbol times, the precoding step is defined by $\alpha_n = [d_n - d_{n-1}$
$+ 1]_{mod4}$ for even symbol times and $\alpha_n = -[d_n - d_{n-1} + 1]_{mod4}$ for
odd symbol times.

7. (Previously Presented and Original)   The method of claim 4
wherein the modulation index is 1/2.

8. (Previously Presented and Original)   The method of claim 4
wherein the bandwidth time product is 1/3.

9. (Previously Presented and Original)   The method of claim 4
wherein the filtering step is a matched filtering step for applying
a principal Laurent function to the baseband signal so that the
filtered signal comprises a principal Laurent component.

///

1 11. (Previously Presented and Twice Amended) A method for

2 communicating a data stream, the method comprising the steps of,

3   generating a sequence of data symbols from the data stream by

4 formatting the data stream into the sequence of formatted data

5 pulses as a sequence of data symbols within a 4-ary symbol set,

6   precoding the sequence of data symbols into a sequence of

7 precoded data symbols,

8   Gaussian filtering the precoded sequence of data symbols into

9 pulse responses continuously accumulated over a finite memory time

10 as a filter response, the Gaussian filtering is defined by a

11 bandwidth time product inversely defining the finite memory time,

12   frequency modulating a carrier reference by the filter

13 response by a modulation index for converting the filter response

14 into a continuous phase modulated signal,

15   matched filtering the continuous phase modulated signal into a

16 filtered signal, the matched filtering is matched by pulse

17 amplitude modulation representation to the Gaussian filtering, the

18 filtered signal has an absolute phase at a periodic sampling time

19 for indicating the sequence of data symbols, and

20   demodulating the sequence of data symbols into an estimate of

21 the data steam.

22

23

24

25

26

27

28 ///

12. (Previously Presented and Original   The method of claim 11, wherein,

the sequence of data symbols has a data symbol d_n at a current symbol time n and has a data symbol d_{n-1} at an immediate previous symbol time n-1 for precoding the data sequence into the sequence precoded data symbols having a precoded data symbol α_n at the current symbol time, the precoding step is defined by $\alpha_n = [\ d_n - d_{n-1} + 1\ ]_{mod8}$.

13. (Previously Presented and Original) The method of claim 12 wherein the precoded data symbol α_n is defined by the 4-ary symbol set of +1, -1, +3 and -3.

14. (Previously Presented and Original) The method of claim 12 wherein the modulation index is 1/4.

15. (Previously Presented and Original)   The method of claim 11, wherein,

the sequence of data symbols has a data symbol d_n at a current symbol time n and has a data symbol d_{n-1} at an immediate previous symbol time n-1 for precoding the data sequence into the sequence precoded data symbols having a precoded data symbol α_n at the current symbol time, the precoding step is defined by $\alpha_n = [\ d_n - d_{n-1} + 3\ ]_{mod8}$.

16. (Previously Presented and Original) The method of claim 15 wherein the precoded data symbol α_n is defined by the 4-ary symbol set of +1, -1, +3 and -3.

17. (Previously Presented and Original) The method of claim 15 wherein the modulation index is 1/4.

18. (Previously Presented and Amended) The method of claim 11 wherein the filtering step is a matched filtering step for applying a principal Laurent function, a third Laurent function and a twelfth Laurent function to the baseband signal so that the filtered signal comprises a principal Laurent component, a third Laurent component and a twelfth Laurent component.

19. (Previously presented and original) The method of claim 11 wherein the modulation index is 3/4.

20. (Previously presented and original) The method of claim 11 wherein the bandwidth time product is 1/3.

///